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## THE SCHEMA OF INTROSPECTION

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### *I. Introspection as a Generic Term*

I have shown in a previous paper<sup>1</sup> that the term Introspection, as we find it used to-day, is highly equivocal, and that the procedure which it connotes may be scientifically illegitimate, or even wholly imaginary. I reserve the name henceforth for methods that are scientifically available and that appear to have been actually employed. The plural form 'methods' is still in order; for introspection, even with this limitation, remains a generic term and, in so far, a term of equivocal meaning. Let us suppose that the 'subjective' conditions of observation—observational type, general training and special practice, temporary disposition and the like—have all been standardised: nevertheless, the course that an observer follows will vary in detail with the nature of the consciousness observed, with the purpose of the experiment, with the instruction given by the experimenter. Introspection is thus a generic term, and covers an indefinitely large group of specific methodical procedures.

The common trait that holds these methods together may be characterised in various ways. We may say, for example, that all introspection presupposes the standpoint of descriptive psychology. The results to which it leads belong to what Jevons calls 'empirical knowledge,'<sup>2</sup> and are logically

<sup>1</sup> *Prolegomena to a Study of Introspection*, this JOURNAL, xxiii, 1912, 427 ff.

<sup>2</sup> W. S. Jevons, *The Principles of Science*, 1900, 526 ff.

prior to any sort of systematisation of conscious phenomena. There are, to be sure, different levels of psychological observation: we may accept a terminology, or a generalisation, or the preliminary chapters of a system, and may proceed to observe in these terms and on this basis; and there are, again, different backgrounds of observation: we may postulate a certain type of system, and so commit ourselves beforehand to a particular mode of explanation. But the data of introspection are never themselves explanatory; they tell us nothing of mental causation, or of physiological dependence, or of genetic derivation. The ideal introspective report is an accurate description, made in the interests of psychology, of some conscious process. Causation, dependence, development are then matters of inference.<sup>3</sup>

We may say, again, that the introspective methods do us the same service in psychology that the inspective methods—‘observation and experiment’ is the more usual phrase—do in natural science. To get a rough appreciation of the scope and the limitations of introspection, we have then only to shift the scene to chemistry or biology, and to realise what can be accomplished in those sciences by methods of direct and indi-

<sup>3</sup> I quote a few passages. In general, “introspection of itself cannot furnish a theory of our psychical processes:” O. Külpe, *Grundriss der Psychologie*, 1893, 10. As regards causation, “association, the connection of ideas, is not a phenomenon of consciousness. . . . We thus formulate an hypothesis; we do not note a fact of consciousness that is evident of itself:” E. Claparède, *L'association des idées*, 1903, 6 f. As regards dependence, “the sensation as such . . . neither refers us to the organs in which it has arisen under the operation of external or internal stimuli, nor indicates the character of these stimuli themselves.” W. Wundt, *Phys. Psychol.*, i, 1893, 412; cf. *Philos. Studien*, ii, 1885, 302 ff. As regards development, “psychology, in order to make valid its claim to be a science, must not merely display” the facts ascertained by introspection; it must also, among other things, “trace the stages of their development from what is simpler to what is more complex:” G. T. Ladd, *Elements of Physiol. Psych.*, 1887, 10; cf. J. M. Baldwin, *Mental Development in the Child and the Race: Methods and Processes*, 1895, 3 (where the ‘genetic conception’ is placed under the heading ‘explanation’ as opposed to ‘description’). Indeed, the statement of the text would be simply a commonplace were it not that this natural limitation of the observational method is sometimes made a reproach to introspection. Cf., e. g., R. Dodge, *The Theory and Limitations of Introspection*, this JOURNAL, xxiii, 226: “Introspection has never been able to fill out the causal relations of any fact of consciousness,” etc. But neither does external observation reveal physical causation; that is always an inference,—based on observation, and confirmed by observation, but none the less an inference. Or cf. N. Kostyleff, *Les travaux de l'école de Wurzbourg: contribution à l'étude objective de la pensée*, *Rev. philos.*, lxx, 1910, 554, 570, 576, 580.

rect observation. There is, perhaps, no reason to fear that this statement will be misinterpreted; but to avoid possible misunderstanding I add two qualifying remarks. In the first place, if we are to interpret it aright, we must free ourselves of the popular belief that the experiment of natural science is an explanatory test; we must recognise that, while an experiment may have an explanatory value, it is itself observational. And in the second place we must remember that the resemblance between inspection and introspection is a broad and general likeness, which consists with all manner of difference in degree and in detail. It has, of course, been customary for psychological text-books to emphasise these differences; and I do not suppose that the weight of tradition and authority can be overcome all in a moment. I am convinced, however, that the right way to approach the study of psychological method is to assume that it is, in all essentials, identical with the observational procedure of the natural sciences.<sup>4</sup>

The thesis that introspection is simply the common scientific method of observation, applied from the standpoint of a descriptive psychology, was maintained explicitly by Pillsbury in 1904: "It would seem that introspection differs from [external] observation only in the attitude of mind as we examine the mental process."<sup>5</sup> I argued to the same

<sup>4</sup> With the above paragraphs cf. G. E. Müller, *Zur Analyse der Gedächtnistätigkeit und des Vorstellungsverlaufes*, i, 1911, 63 *sub fin.*, 81 ff. Readers of my earlier paper will not need to be reminded that I mean here, by 'psychological experiment,' such an experiment as only a man with specifically psychological training is capable of performing. Many other sorts of experiments are made, by psychologists, in the interest of the psychological system; and these may properly be termed, in another context, 'psychological experiments,' but they are not now under discussion.

<sup>5</sup> W. B. Pillsbury, A Suggestion toward a Reinterpretation of Introspection, *Jour. Phil. Psych. Sci. Meth.*, i, 1904, 228. The title of this paper shows that the author regards his position as novel. He thinks, however, that it is implied in the work of Wundt and Külpe; and, indeed, if we accept formal statement in the one case and actual procedure in the other, we may find evidence to that effect: see, e. g., W. Wundt, *Logik*, ii, 2, 1895, 170 ff.; O. Külpe, *Grundriss der Psych.*, 1893, 8 ff. The same thing may be said of H. Münsterberg, *Ueber Aufgaben und Methoden der Psych.*, 1891, 145, 153 ff. It is notoriously difficult, in cases like this, to refer an idea specifically to men and dates. James, e. g., declares that psychology is a natural science, and yet offers an account of introspection that differentiates it from external observation (W. James, *Princ. of Psych.*, i, 1890, 183 ff.). Robertson writes that "psychology, by itself, is in the first instance positive phenomenal science—positive as to its method, phenomenal as to its subject-matter. Its method does not differ from that of other positive sciences, like biology or chemistry, except as the method of any science is modified by the peculiarity of its subject." There is, however, an

effect in 1908;<sup>6</sup> and Müller has taken a like position in his recent work on *Memory*.<sup>7</sup>

But if this thesis is correct, have we any reason for keeping the term introspection in our psychological vocabulary? None at all, I think, if we consider the matter from the point of view of an abstract methodology. On the other hand, this introspection, or observation from the standpoint of psychology, is the unique business of the psychologist; it is something that the psychologist's training fits him to do, and that no other form of scientific training leads up to or includes. Everything else that belongs to the system of psychology can, formally or theoretically, be done just as well by the physicist or biologist as by the psychologist,—though it is true that adequate and satisfactory explanations in psychology may be expected rather from the man with special psychological training and knowledge than from the student of general science or from the specialist in some other field. Introspection, then, is in a peculiar and exclusive sense the business of the psychologist, and it is well that this business should have a specific name. When, moreover, we have a traditional term, that is full of misleading suggestions to the student, it is wiser to adopt that term, reading the suggestions out and reading a sound definition in, than to pass it by and introduce a new coinage.

*The Stimulus Error.*—It would be foolish to blink the fact that our current text-books still point out a number of alleged differences between introspection and inspection. In the main, however, these statements do not rest upon empirical induction, but rather derive from the authors' epistemology. The truly empirical differences will be variously rated by different psychologists; the time is not yet ripe for a point-by-point comparison of the methods. Meanwhile, those psychologists who do not regard the differences as fundamental must walk warily, or they will find that, so far as the teaching of psychology is concerned, they have bought their insight at a high price. The idea of an unique method, a specific way of working, is far more easily grasped by the beginner in psychology than is the idea of a shift of mental attitude. Indeed, the reformed doctrine opens a wide door to the 'stimulus error.' The observer in a psychological experiment falls into this error, as we all know, when he exchanges the attitude of descriptive psychology for that of common sense or of natural science; in the typical case, when he attends not to 'sensation' but to 'stimulus.' Now, in work upon color-equations, *e. g.*, it makes little difference whether the observer regard himself as matching color-sensations or colored papers. But one cannot make any large number of observations, even in the simplest fields of sense, without discovering that the confusion of attitudes has very serious consequences. The stimulus error is, in fact, the material aspect of what appears, in more formal guise, as the error of logical reflection or of *Kundgabe*; it is an error both subtle and pervasive; and the more closely our psychological

'in the second instance' which marks off psychology, method and problem alike, from the natural sciences (G. C. Robertson, *Psychology and Philosophy*, *Mind*, O. S. viii, 1883, 9; *Elements of Psychology*, 1896, Editor's introduction, xi). J. S. Mill declares that there is a science of mind, whose methods are observation and experiment (*A System of Logic*, bk. vi, ch. 4, § 2 [1884, 556]); but I need not say that we should go far astray if we took this statement *au pied de la lettre*.

<sup>6</sup> *Feeling and Attention*, 1908, 175 ff., 354 ff. Cf. *Text-book*, 1909, 19 ff.; R. M. Yerkes, *Introduction to Psychology*, 1911, 39 ff.

<sup>7</sup> *Op. cit.*, 64 ff., 81 ff.

method approximates the methods of observation employed in other laboratories or in daily life, the greater is the likelihood that our students fall victims to it.

The stimulus error may even affect our views of introspection itself. At a recent meeting of Experimental Psychologists it was urged, with special reference to tachistoscopic experiments, that introspection is wholly unreliable; for if we compare the observer's reports with the stimuli actually exposed, we find that he may see what was not there at all, may fail to see much of what was there, and may misrepresent the little that he really perceived; introspection adds, subtracts, and distorts. The question, however, so far as the validity of introspection is concerned, is not whether the reports tally with the stimuli, but whether they give accurate descriptions of the observer's experimental consciousness; they might be fantastically wrong in the first regard, and yet absolutely accurate in regard to conscious contents. In other words, the objection issues from the stimulus error. The observer is trying to describe a consciousness; not certain objective letters or figures, but the consciousness which a brief exposure of these stimuli induces. His description may be mistaken or inadequate, and we must use every possible methodological means to discover its mistakes and to supplement its omissions; but we cannot gauge the method by reference to the stimuli.

It seems, therefore, that if we assimilate introspection to inspection we must, in laboratory practice, be more than ever on our guard against the stimulus error. We shall invert Steinthal's story;<sup>8</sup> and, letting geologist, farmer, landscape gardener, psychologist, traverse and report upon the same bit of country, we shall explain that all four reports may be equally true, but that each one plainly implies a particular attitude, a special point of view. It is the attitude and point of view, not the method, which must henceforth serve to distinguish the introspecting from the inspecting man of science.

*Phenomenology and Descriptive Psychology.*—I have tried in other writings to show the nature of this 'descriptive psychology' whose methods are summed up by the term 'introspection.' On the positive side, I have here nothing new to add. On the negative side, I would warn the reader against confusing descriptive psychology with a 'phenomenological' account of mind. The word 'phenomenology' has played a large part in recent discussion, and has been variously defined. In the present connection I mean, by a phenomenological account of mind, an account which purports to take mental phenomena at their face value, which records them as they are 'given' in everyday experience; the account furnished by a naïve, common-sense, non-scientific observer, who has not yet adopted the special attitude of the psychologist, but who from his neutral standpoint aims to be as full and as accurate as the psychologist himself. It is more than doubtful whether, in strictness, such an account can be obtained. We can hardly, with the pressure of tradition and of linguistic forms upon us, consider mental phenomena in a really naïve way, with a truly blank prescientific impartiality; our common sense runs to logic, embodies a psychology of reflection; face values are, in fact, highly sophisticated values, and things given are things that have been many times made over. The proof, if proof be needed, is that phenomenology, when it leaves what might be thought its proper sphere of gross description and

<sup>8</sup> H. Steinthal, *Einleitung in die Psychologie und Sprachwissenschaft*, 1881, 167 f.; translated by W. James, *Principles of Psychology*, ii, 1890, 108.

takes to analysis, tends inevitably to analyse under logical categories; it works out implications, while descriptive psychology—under the same *Aufgabe* of analysis—teases out the existential factors in the consciousness to be described. A phenomenological ‘system’ is therefore an epistemological *tour de force*, rather than a prepsychological synthesis of the data of psychology.

We need not hesitate to admit, on the other hand, that a roughly phenomenological account, a description of consciousness as it shows itself to common sense, may be useful or even necessary as the starting-point of a truly psychological description. The psychologist may attempt it; or it may be supplied by the novelist, or the diarist, or by any untrained but alert observer. The psychologist may also have recourse to phenomenology after the event, after he has completed his own first analysis, as an additional check upon the singly motived and more technical description. Or again, the elaborate phenomenology that issues from a foregone epistemology may be of service as indicating possible *lacunae* in psychological description. But phenomenology, as I am here using the term, is not psychology; and if, as will naturally be the case, phenomenological and psychological results are sometimes in accord, this casual agreement must not tempt us to generalisation or lead us to identify different attitudes toward experience.<sup>9</sup>

## 2. *The Introspective Schema: Free and Controlled Consciousness*

In an attempt to reduce observation to its lowest scientific terms, I have said that it “implies two things: attention to

<sup>9</sup> The phenomenology that I have in mind is, of course, that of Husserl, and not that of Brentano and Stumpf. An adequate discussion would require another article; I can here only express my opinion that no form of phenomenology—phenomenology of mind, *Gegenstandstheorie*, science of selves—can be truly scientific, for the reason that the implied attitude to experience is multiply motived and fluctuating, while the *minimum* requirement of science is a fixed and constant point of view.

With the general subject of the above paragraphs, cf. A. Messer, Husserls Phänomenologie in ihrem Verhältnis zur Psychologie, *Arch. f. d. ges. Psych.*, xxii, 1911, 117 ff.; W. Wundt, Psychologismus und Logizismus, *Kleine Schriften*, i, 1910, 511 ff.; and, more especially, G. Reichwein, *Die neueren Untersuchungen über Psychologie des Denkens nach Aufgabestellung, Methode und Resultaten übersichtlich dargestellt und kritisch beurteilt*, 1910, 116, 125 f., 136. This work, a doctorate thesis of the University of Halle, written under Meumann's direction, seems to have failed of its due recognition, both in Germany and in America. It undertakes a detailed comparison of Wundt's psychology of thought with the doctrines of the Würzburg school; and the author maintains, I think correctly, that Wundt's position, whether right or wrong upon special points, is more consistently psychological and implies a wider psychological perspective than that of his opponents. The comparison is all the more timely since the Würzburg authors have, in general, made little more than incidental reference to Wundt, and since Wundt's views have been grossly misrepresented by certain critics (J. B. Sauze, *L'école de Wurtzbourg et la méthode d'introspection expérimentale*, *Rev. de philos.*, xviii, 1911, 225 ff.; F. A. Gemelli, *L'introspezione sperimentale nello studio del pensiero e della volontà*, *Riv. di psicol. appl.*, vii, 1911, 289 ff.).

the phenomena, and record of the phenomena.”<sup>10</sup> Psychological observation implies, accordingly, an attention from the standpoint of psychology, and a record in the terms and under the captions of psychology. And if we are seeking a first, provisional classification of the introspective methods, we shall look for salient differences in the conditions under which attention is given and record is made.

This course is, in fact, followed by Müller in his recent work on Memory. The essential thing in every case of introspection, Müller says, is that some conscious process or part-process, some state of consciousness or complex of states of consciousness, is made the object of a ‘conscious psychological apperception.’ This apperception is an appraisement, a judgment, a ‘placing,’ from the psychological standpoint, of the state or process which is to be observed. It may be explicit, consisting of a “properly formulated sentence in internal speech, to which may even be added an inner comment such as ‘important!’ or ‘don’t forget!’” Or again it may be sketchy and fleeting, and make but little claim upon consciousness,—consisting perhaps of the bare suggestion (*das mässig deutliche Anklingen*) of verbal glosses, visual ideas, and so forth. The method is completed by a description, which gives the apperception or appraisement “a linguistic expression in accordance with instruction.”

If now we take the psychological apperception as the basis of a classification, we have two principal forms of the introspective method. In Direct Introspection, the process under observation is apperceived immediately, while it is still present. There are then two possibilities: description may be made at once, or may be deferred to a later time and based upon a remembered apperception. In Indirect Introspection, on the other hand, the process to be observed is recalled, as a memory image, and apperception and description have reference to this representative memory-process. If we tabulate, we get the three following procedures:

- I. Direct Introspection.
  - 1. Process and apperception occur together. Description is made on the basis of present immediacy.
  - 2. Process and apperception occur together. Description is made on the basis of remembered apperception.
- II. Indirect Introspection. Process is recalled as memory-image. Apperception is of memory-image, and description is made on the basis of this apperception.

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<sup>10</sup> *Text-book*, 1910, 19 f.

This appears to be, essentially, a classification in terms of what I have called 'attention.' In practice, however, indirect introspection and the second form of direct introspection are likely to run together; and it is therefore more useful to classify on the ground of 'record' or description. The description of a conscious process—I am still paraphrasing Müller—may be immediate, or may be mediated by retrospection. In the former case, the subject-matter of description is the observed process itself. The process may perhaps change while the description is still in course, just as a fire-work may change to blue while we are still exclaiming 'What a glorious red!'; but the description attaches, none the less, to the actual process. In the second case, description is made from a representative memory of the process; or from memory of a psychological apperception of the process; or from a combination of these two memories.<sup>11</sup> If we tabulate, we have:

<sup>11</sup> G. E. Müller, *op. cit.*, 68 ff., 81 ff. Esp. 69 (cases in which a psychical process or part-process is *beurteilt oder kommentiert* from the psychological standpoint are cases of conscious psychological apperception); 70 f. (various levels of psychological apperception); 86 f. (in all cases of introspection, a conscious state or a complex of states is judged [*ein Urteil gefällt wird*] from the psychological standpoint); 87 notes (negligible cases); 88 (*die Beurteilung, welcher die Beschreibung einen vorschriftsmässigen sprachlichen Ausdruck gibt*).

So far as I can judge, my own terms 'attention' and 'record' cover the procedure that Müller characterises as psychological apperception and description, with the difference that Müller is speaking in the concrete, while my treatment is abstractly analytical. If we have recourse to formulas, Müller's method is (*psychological apperception*) → *description*, and mine is *psychological* (*attention, record*). Müller, in other words, emphasises the empirical unitariness of the particular introspection, and thus includes under apperception things that I should refer to psychological *Aufgabe* and to record. Müller's statement is, however, so brief that I cannot be perfectly sure of this interpretation.

I am inclined to think that, wherever in this discussion Müller uses the term memory (*Erinnerung an*), he has in mind a reproduction in kind, a representative memory. This is certainly intended when the memory of the conscious state or process itself is spoken of; cf. the phrases *in der Erinnerung wieder vergegenwärtigen* and *Erinnerungsbild* on p. 65 (description of an external object). I think that it is also intended when an apperception is said to be remembered: cf. the *vergegenwärtigt* of p. 68, and the instances given, pp. 65 f. In the latter case, however, I imagine that a symbolic memory would serve the purpose.

Münsterberg (*op. cit.*, 170) rules out 'pseudo-memory by verbal description' altogether. His point of view in this passage is, however, different from that of Müller, and I see no reason why he should

- I. Immediate Description, on the basis of immediacy of process and present apperception.
- II. Retrospective Description:
  1. On the basis of present apperception of a memory-image of the process;
  2. On the basis of a remembered apperception, which itself occurred when the process was given;
  3. On the mixed basis of these two memories.

At this point Müller introduces an important distinction,—the distinction of free and controlled consciousness. A conscious state or process is free when it is neither evoked nor influenced by the intent to observe; it is controlled when it arises under the influence of an introspective intent and as the object of a consequent attention especially directed upon it. We have, plainly, no right to generalise *a priori* from the controlled to the free; whenever generalisation is made, it must be justified by a statement of its methodological grounds. Nor is the line of division, in every case, easy to draw; we may slip insensibly, as we make our instructions more and more precise, from freedom to control. On all accounts, then, and whatever be the phase of introspection that we are examining, the distinction of free and controlled consciousness must be borne explicitly in mind.<sup>12</sup>

The distinction thus drawn must not be confused with that contained in the old-time objection to experimental psychology, that observation in the laboratory is observation under artificial conditions, and can therefore tell us nothing of the real mind.<sup>13</sup> For the disjunction real-artificial is not identical with free-controlled; and free consciousnesses may be studied in the laboratory not only as well as, but even better than they can be studied in everyday life.<sup>14</sup> Nor must the distinction be confused, again, with that of 'spontaneous' and 'voluntarily aroused,' which the studies of mental imagery have made familiar; for an image, though it rise spontaneously, may be made by

not accept Müller's 'remembrance of an apperception' as a factor in psychological method. On the other hand, Münsterberg believes that introspection is impossible without a previous knowledge of anatomy and physiology (*op. cit.*, 160, 164). Here I cannot follow him.

<sup>12</sup> *Op. cit.*, 73, 79, 95, 98 f., 120. The passage 98 f. describes a case in which generalisation is, within certain limits, permissible.

<sup>13</sup> See, e. g., J. M. Baldwin, *Handbook of Psychology: Senses and Intellect*, 1890, 30; H. Münsterberg, *op. cit.*, 234; O. Külpe, *op. cit.*, 12; W. Wundt, *Logik*, ii, 2, 1895, 175; J. McK. Cattell, *Psych. Rev.*, iii, 1896, 141. The distinction drawn by Müller is, again, not the same as Münsterberg's classification by natural and artificial (*i. e.*, experimental) conditions: *op. cit.*, 149 f., etc.

<sup>14</sup> It is therefore unfortunate that Müller uses the terms 'natural' and 'constrained.' The antithesis of natural is unnatural or artificial; and, as Müller expressly says (*op. cit.*, 73 *note*), the constrained processes are by no means unnatural.

instruction the object of a particular attention, and in so far is a controlled process.<sup>16</sup>

The distinction must be observed by all those psychologists who use the phrase 'mental process' or 'mental phenomenon' as identical with, or inclusive of, what the older psychologies term 'conscious contents.' Introspection of a free consciousness may demand, for instance, the description of processes at various levels of attention.<sup>17</sup> The distinction seems to lapse, on the other hand, for all those who, with Stumpf, regard conscious contents or 'phenomena' as in principle independent of the function of 'perceiving' or 'remarking' or 'taking notice.' All that remains of it, if I read Stumpf correctly, is a difference of degree in the function itself,—a difference, as he figuratively expresses it, in the amount of consciousness directed toward (*die Ansammlung von Bewusstsein gegenüber*) a particular phenomenon. I cannot, of course, enter here upon a criticism of this other distinction, of act and content, function and phenomenon.<sup>18</sup> It is, however, worth noting, as a sign of the immaturity of psychology and of its imperfect separation from philosophy, that the empirical difference of free and controlled consciousness is dismissed, in certain modern systems, by a wave of the epistemological wand.

### 3. Consciousness as the Object of Introspective Description

Let us assume, for the purposes of the present argument, that Müller's schema of introspection is both adequate to and applicable by a descriptive psychology. Müller is writing primarily, of course, with reference to the special psychology of Memory; and he finds it necessary, even in this restricted field, to supplement the bare statement of method by a long list of cautions and regulative maxims. The main points of his exposition may lay claim, nevertheless, to general psychological validity.<sup>19</sup> I assume, therefore, that in introspection we are describing a conscious process at first hand, or describing at first hand the representative memory of a past process, or describing from memory the way in which we 'placed' some past process at the time of its occurrence. And I assume, further, that we have the skill to make

<sup>16</sup> The distinction runs through the 'literature' of imagery, from G. Cardano in the sixteenth century to G. H. Betts in the twentieth. On the control of a spontaneous image cf. Müller, *op. cit.*, 78 f.

<sup>17</sup> I have shown elsewhere how my own formula deals with this case. See Attention as Sensory Clearness, *Jour. Philos. Psych. Sci. Meth.*, vii, 1910, 180 ff.

<sup>18</sup> I have discussed certain aspects of the distinction in *Thought-processes*, 1909, 41 ff. The act-psychology seems to me to reach its *reductio ad absurdum* in S. Alexander's Foundations and Sketch-plan of a Conational Psychology (*Brit. Jour. Psych.*, iv, 1911, 239 ff.), which swings us from the *vis representativa* of faculty days to the opposite pole of conation.

<sup>19</sup> Müller himself writes (*op. cit.*, 63) that his "general account of the nature and forms of introspection, and the principal formulae and rules given in the course of the discussion, are to be regarded as generally valid."

this description in psychological terms and to keep it within psychological limits. Now the question arises: What are the categories of description? or, in other words: What is consciousness as describable object?

The categories of description, I should reply, are the last terms of analysis, the elementary processes and their attributes; and consciousness has been described when analysis is, qualitatively and quantitatively, complete. This reply I take to be formally correct. In practice, it needs a twofold qualification: for, first, psychologists are not yet at one as regards the nature and number of elementary processes and their attributes; and, secondly, psychology is not yet able to cope, in thorough-going analytical fashion, even with a moderately complex formation, to say nothing of a total consciousness. Both points are illustrated by the recent work upon Thought. In this field, experimental evidence is offered for a new elementary process, a thought-element, with its own attributes and its own laws of connection; while at the same time there is fairly general agreement that the observational methods at present available are not adequate to a full description of the thought-consciousness. The qualifications do not, however, affect the formal accuracy of the original statement.

We are here upon highly debatable ground. I therefore add, even at the risk of threshing old straw, brief comments upon the terms employed in the above paragraph; and I discuss certain corollaries that follow from my attitude to the question which it seeks to answer.

*The Need of Analysis.*—It would be unnecessary to insist upon the primary necessity of analysis, were it not that protest is often raised against the analytical treatment of consciousness and the resulting 'atomistic' psychology. Ebbinghaus has met this protest in a form which deserves to become classical.<sup>19</sup> I shall not repeat his argument, but I will supplement it by reference to two concrete cases. The psychologists who have stood most emphatically for the continuity of consciousness are, I suppose, Ward and James. "Mind," says Robertson, "has the character—a character adequately brought out only by Dr. Ward among psychologists—of continuity as its most prominent, salient feature."<sup>20</sup> Yet the first chapter-heading of Ward's *Psychology* is 'General Analysis.'<sup>21</sup> James' chapter on The Stream of Thought, which has already become a classic upon the anti-atomistic side, posits the fact that "thinking of some sort goes on." Its author then proceeds: "How does it go on? We notice immediately five important characters in the process." And this discrimination of characters is

<sup>19</sup> H. Ebbinghaus, *Grundzüge der Psychologie*, i, 1897, 164 ff.; H. Ebbinghaus and E. Dürr, *ibid.*, 1911, 177 ff.

<sup>20</sup> G. C. Robertson, *Elements of Psychol.*, 1896, 16; cf. the author's own continuation (17): "science is insight by way of analysis."

<sup>21</sup> J. Ward, *Encycl. Brit.*, xxii, 1911, 548.

obviously an instance of that mode of analysis which James later terms 'the process of abstraction.'<sup>22</sup>

There is no doubt, then, that a descriptive psychology must be analytical. But objection may be taken to the way in which the descriptive psychologist formulates the problem of analysis. Stratton, for instance, rejects the chemical analogy; "we may name the elements to perfection, without a perfect description of the active whole;" "description is more than a statement of elements and their proportions; other relations and modes of interconnection are important."<sup>23</sup> I am not sure that a 'perfect' description can ever be attained.<sup>24</sup> I believe, however, that many of Stratton's *desiderata*—the 'architectural features' of consciousness, the 'manner of behavior' of the constituent processes—would be supplied by an exact description in attributive terms. If the result is still unsatisfactory, it is surely an open question whether description is at fault or whether we are not demanding of description more than it can, by its very nature, give us; whether, that is, our craving for explanation has not led us to cast unmerited reproach on a non-explanatory or pre-explanatory method. Or again, objection may be taken to the results of analysis. Thus Ogden, in reviewing an analytical study of the consciousness of Belief, remarks: "One might imagine that Okabe's results would apply equally well to a description of the aesthetic attitude, the ethical attitude, the consciousness of understanding, or indeed any other of the higher apperceptive states of mind."<sup>25</sup> I do not myself think that description, even in its present immature condition, is so ill bestead. Let us assume, however,—still for the argument's sake,—that an accurate description of 'the higher apperceptive states' fails to discriminate belief from understanding, the moral from the aesthetic judgment. The inference would be, simply enough, that our current differentiation of these consciousnesses is a differentiation of import or value, or in other words that it transcends description. But if this is the fact, it is to our advantage to know it,—while it is foolish to blame the descriptive method for stopping short with description.<sup>26</sup>

<sup>22</sup> W. James, *op. cit.*, i, 1890, 224 f., 505. The discussion of the Stream of Thought is, in many passages, highly analytical.

<sup>23</sup> G. M. Stratton, Toward the Correction of Some Rival Methods in Psychology, *Psych. Rev.*, xvi, 1909, 75, 80, 84.

<sup>24</sup> Cf. Description *vs.* Statement of Meaning, this JOURNAL, xxiii, 1912, 166.

<sup>25</sup> R. M. Ogden, Imageless Thought: Résumé and Critique, *Psychol. Bulletin*, viii, 1911, 194. A closer study of the data will, I believe, show that Ogden's imagination has misled him. In any case, the descriptive psychology of these 'higher' processes is still only in the pioneer stage.

<sup>26</sup> I suspect that the neglect of Müller's distinction of free and controlled consciousness is responsible for much of the current dislike of psychological analysis. The 'elements' of our text-books are clear-cut affairs, processes isolated from context and set in the high light of attention. It is true that we speak also of laws of connection, and discuss the phenomena of contrast, of fusion, of inhibition, and the like. Yet when we say that a given consciousness is made up, *e. g.*, of kinaesthetic sensations, the reader is apt to think of the kinaesthetic sensations described under that heading in the books, of kinaesthesia focalised and abstracted. But if he tries in this way to synthetise a free consciousness by the juxtaposition of controlled elementary processes, it is no wonder that he comes out with an artificial mosaic which

*Process and Function.*—Arguments of this sort, however, move only on the surface of things. If we wish to go deeper, we must be clear, first of all, as to what we mean by the term 'process.'

The experimental psychologist, if I understand him, means by process something more than the abstract form of occurrence in time; so that when we say, *e. g.*, that perception is a process, and speak on the other hand of the process of growth, or the process of decay, we are using the word in different meanings. A process, in the psychological sense, is an item of experience to the nature of which durativeness (if the word may be pardoned) is integral and essential. It is true, in the large, that all experience is temporal. Yet there are numberless cases in which the progress of experience is so slow that its process-character may be ignored; we then speak of 'things.' And there are other cases in which the progress is too fast for direct temporal apprehension; we then speak of 'events.' Now it is characteristic of consciousness that its constituents are typically processes. We may find analogies in such experiences as a thunder-storm, a luncheon, an address: here is plenty of content,—heat and rain, thunder and lightning; things to eat and things to drink, speeches and table decorations; topics discussed, introduction and peroration: but it is of the essence of the experience that it occupies a certain, limited time; and its description implies constant reference to this durative attribute. So it is with consciousness. Process is a relative term; and there are times when a conscious complex is relatively so stable that we are justified in applying to it the older term 'state of consciousness' or the more modern 'conscious formation';<sup>27</sup> just as there are times when the stream of thought is so rapid that we speak of conscious 'events' or 'occurrences.' Nevertheless, Wundt and James are absolutely in the right when they emphasise the 'going on' of thought or of idea; our descriptions of consciousness, if they are to be satisfactory, must be through and through temporal; our vocabulary must be rich in words that indicate the passage and course of time.<sup>28</sup>

Only, once more, the psychological process is not the bare form of temporal occurrence. An experience of perception is, as I have insisted, a durative experience; it is not identical with the percept, the *perceptum*. But neither is it identical with perceiving. This 'act' or 'function' of perceiving is, in my judgment, a logical or epistemological abstraction from the concrete experience; it is not an empirically discriminable feature of perception. And in the same way the static percept, in so far as it is psychological,—in so far, that is, as it stands for conscious content, and not for a thing of common sense or an object

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bears small resemblance to the continuum that he is seeking to reproduce. And then arise misunderstandings like that of H. J. Watt, who believes that the 'notion of process' has, in my *Thought-processes*, exercised a 'solvent action upon the precisely definable elements of *The Psychology of Feeling and Attention*' (*Mind*, N. S. xx, 1911, 109, 112).

<sup>27</sup> H. Ebbinghaus, *op. cit.*, i, 1897, 163 f. The passage has disappeared from the edition of 1911. I cannot but regret the systematic changes which Dürr has thought it necessary to introduce into the first volume of the *Grundzüge*. Ebbinghaus had thought things through for himself, and would not, I am sure, have approved of some of these changes. Cf., however, the Editor's preface, xi ff.

<sup>28</sup> I am aware of the summary character of these remarks; and I realise that there is need of a thorough-going historical and critical discussion of our current psychological terms.

of natural science,—is also an abstraction from experience, not empirically discriminable. In other words, it is impossible, by introspective analysis, to break up a perception into perceiving and percept; for that, observation must give place to logic. We may, of course, seize upon some particular moment of perception, which we regard as typical of the whole course, and may be content to describe it and to neglect the past and future, the rise and fall of the total process. For purposes of elementary instruction, more especially, this substituting of the snapshot for the moving picture may be advisable or necessary. But we must still make it clear that what we are describing is a phase of the perception,—not the perception itself, nor yet the percept abstracted from the perception.

In this whole matter of the process, the precept of experimental psychology has been better than its practice. The concept, in Wundt's hands, did yeoman service against the logical statics of associationism. But the analytical work of the laboratories has tended, I think, toward a psychological statics; the temporal aspects of our subject-matter have been unduly neglected. And logic, as if in revenge, has entered psychology by another door, and offers the Stumpfian functions of noticing and classifying, of conceiving and judging, of emotion and appetite, as *Erlebnisse* to be taken account of in any complete description of the 'immediately given.'<sup>29</sup>

*The Data of Observation.*—As against this view of Stumpf's, I agree with Münsterberg that "what are called inner activities are in fact only contents of consciousness;"<sup>30</sup> though for reasons already given I prefer the term 'content-processes' to the bare 'contents.' We cannot observe an experiencing; we are not called upon, in psychology, to observe an experienced; what we observe is experience.

The 'limitations' of introspection now follow of themselves; they are given with its definition; they are of the same sort as the 'limitations' of a microscope or a camera. We can observe only what is observable; and we cannot observe any product of logical abstraction. We cannot, therefore, observe relation, though we can observe content-processes that are given in relation. We cannot either observe change, though we can observe changing content-processes for so long a time as attention, under the observational *Aufgabe*, may be maintained. We cannot observe causation, though we can observe content-processes that are definitely conditioned. And so it is in other cases. Psychological description can deal only with content-processes under their empirically distinguishable attributes.

In practice, however, description and explanation, or description and inference, are likely to be intermixed and interchanged in the most various ways.<sup>31</sup> It is, indeed, by this continual shift of standpoint that science advances: and I am pleading neither for rigidity of method nor for pedantry of exposition, but only for clear thinking as the work of system-making goes on. When Stratton says that "a host of real relations *apply* to mental data, without necessarily having any conscious presence or representatives among these data,"<sup>32</sup> I heartily agree; a

<sup>29</sup> C. Stumpf, *Erscheinungen und psychische Funktionen*, 1907, 6 f. A succinct account of the 'objects of introspection,' regarded not as content-processes but as contents and processes, is given by A. Messer, *Empfindung und Denken*, 1908, 74-78.

<sup>30</sup> *Op. cit.*, 170; cf. *Grundzüge d. Psychol.*, i, 1900, 230.

<sup>31</sup> Cf. p. 486 above.

<sup>32</sup> *Op. cit.*, 82. Cf. my *Text-book*, 1910, refs. to *Predisposition*.

competent experimenter will note the relations. When, however, Stratton continues: "and we must make use of these relations in our psychological description even when we cannot find them there as 'elements' in the fact we would describe," I as positively demur; you cannot describe what you cannot observe; your mention of the external conditions introduces a factor of interpretation, which has nothing to do with psychological description. To add interpretation to description is both human and scientific; to call the result a 'psychological description' is to confuse issues. I find this confusion repeated in the following quotation from Judd. "Once the possibility of recognising a wholly different type of *explanation* is admitted, the conscious process [of perception] will be treated as a complex *made up* of sensory elements and other processes which are functional in character and deserving of a separate treatment. We shall then see that any particular phase of experience may be *described* either with reference to its sensory facts or with reference to its functional phases of activity."<sup>32</sup> But to ascribe 'functional activity' to experience is to interpret it.

*The Psychology of Logic.*—We are concerned, in this paper, with a right understanding of the introspective methods; and for that reason emphasis has been laid upon the difference between description and explanation. We have now to take account of a fact that renders their confusion, in psychology, as natural as it is dangerous: the fact that there may be a descriptive psychology of logical operations. Münsterberg prefaces his account of psychological method with the remark that "every investigation set on foot by a special science presupposes the universal logical functions, and no psychological method can yield its full fruit whose user fails in ability to form judgments, concepts, inferences, to develop his thoughts inductively and deductively, to formulate classifications and demonstrations."<sup>33</sup> That is the side of the shield to which we have so far given our attention. But Ward's statement is equally true,—that "'the whole choir of heaven and furniture of earth' may belong to psychology";<sup>34</sup> the domain of psychology is as wide as individual experience. While, then, psychology presupposes logic, it may also consider logic from its own point of view; it may, in particular, furnish an introspective account of the content-processes that correspond to logical operations.

I said that this fact makes it natural for the psychologist to confuse description and explanation, fact and meaning. For, on the one hand, it tempts him to hypostatise the abstractions of logic; to invent content-processes of relation, of judgment, etc., and in this way to secure

<sup>32</sup>C. H. Judd, What is Perception? *Jour. Philos. Psych. Sci. Meth.*, vi, 1909, 41. The italics are mine.—To prevent a possible misunderstanding, I will here state explicitly that I hold no brief for sensation, and do not aim to reduce the content-processes of descriptive psychology to the type of sensation. If the advocates, *e. g.*, of the thought-element can demonstrate a new content-process, I am ready to accept it. More than this: I sincerely welcome any phenomenological term or phrase (such as 'conscious attitude') that challenges to psychological analysis. I note a challenge of this sort in the 'purely dynamic process' found by M. Wertheimer in his recent study of seen movement (*Zeits. f. Psych.*, Ixi, 1912, 245).

<sup>33</sup>*Aufgabe und Methoden*, 145. Wundt says the same thing in his essay Ueber psychologische Methoden, *Philos. Studien*, i, 1883, 3; cf. Die Aufgaben der experimentellen Psychologie, *Essays*, 1906, 206 f.

<sup>34</sup>*Op. cit.*, 548.

a phenomenological agreement of psychology and logic.<sup>36</sup> And, on the other hand, it may blind him to real psychological problems. There will, for instance, be few psychological descriptions, of any length, in which the term 'greater,' or some more specific equivalent, does not occur. We are so much accustomed, in adult life, to the comparative form of the adjective, that this 'greater' may well pass for a descriptive word. Yet in strictness it is, as psychophysical usage rightly declares, the expression of a judgment of comparison; so that the psychologist who accepts it as part of the currency of description overlooks one of the problems that is set by logic to psychology.<sup>37</sup>

*Recapitulation.*—We asked the question: What are the categories of psychological description? or: What is consciousness as describable object? The foregoing paragraphs touch, in the barest way, upon the points which arise as we seek to answer this question. Descriptive psychology must begin with analysis, because analysis is the first task that a given subject-matter assigns to science. The terms of description must be content-processes, because consciousness proves, as we observe it, to be made up of content-processes. At any stage of description, we may bring logic to bear upon our introspective material; but we must not read logic into that material. Finally, a set of accurate descriptions of typical consciousnesses is not a system of psychology; yet, if we may judge by history, there is no short cut to system that avoids the minutiae of description: and while we should make all allowance for differences of temperament, and should recognise every honest effort to further the understanding of mind, we must neither mistake temperamental impatience for reasoned argument nor tire of plodding the low *posteriori* road of observation.

#### 4. *The Introspective Method as applied to Thought*

At this point of the enquiry, it seems advisable to put our conclusions to a practical test. Experimental introspection, we have said, is a procedure that can be formulated; the introspecting psychologist can tell what he does and how he does it. If, now, we seek to formulate the method, in a concrete case, we shall be the better able to judge the value of Müller's schema; we can make such additions and qualifications as may prove to be necessary; we pave the way for

<sup>36</sup> Stratton (*op. cit.*, 81) rightly complains that "relational elements, feelings of relation and the like are often in effect conceived as but one more material or ingredient added to the rest." When he adds, however, that "the account then pursues the evil course of describing a mental fact by attention to its stuff and materials only," he seems to me to miss the point of his own objection.—The same protest against hypostatisation of inferences forms a *Leitmotif* of Judd's essay on Perception, to which I have referred above.

<sup>37</sup> The problem overlooked is in fact twofold, descriptive and genetic. For the psychologist must not only describe the content-processes which, in the particular case, are the vehicle of the judgment; he must also trace the course of development from 'absolute impression' to true 'comparison.'

a detailed consideration of sources of error; we shall perhaps be able to detect and to eliminate spurious forms of experiment. And there are obvious reasons why the processes of thought should furnish the illustration required. I take the investigations in the order of their appearance.

(1) Marbe, in his study of Judgment, makes the method very simple. In order to experiment upon judgment, "one has merely to bring it about that the observer experiences the kind of judgments required, and to ask him to describe his experiences (*Erlebnisse*) immediately after the judgments." Thus, in a special case, the observer "had at once to report (*zu Protokoll geben*) the conscious processes which he had experienced" when the conditions for judgment were completed; moreover, "he was asked not to confine himself, in his description, to the processes that ran their course simultaneously with the perceptions which took on the character of judgment,—since it might possibly be of interest to know what conscious processes introduced the act of judgment."<sup>38</sup> Nothing more is told us. But we may, I think, infer from Marbe's introduction, and from the wording of the reported introspections, that the observers undertook their task in a definitely psychological spirit: a phrasing of experience in familiar psychological terms seems to have been expected by the experimenter and intended by the observers.<sup>39</sup>

(2) Watt, it will be remembered, has six problems, which are formulated in the ordinary logical way: to find a superordinate, subordinate, coördinate concept, and to find a whole, a part, another part of a common whole. He says very little of his method.<sup>40</sup> "After every experiment, the observer reported everything that he had experienced and everything that he cared to say about his experiences. All this was at once written down by the experimenter, and was occasionally supplemented by appropriate questions." "The report depends upon the observer's conscious contents, which he described and expressed in words as quickly as might be."<sup>41</sup> Watt's aim was rather explanatory than descriptive; and he therefore appears to have preferred a phe-

<sup>38</sup> K. Marbe, *Experimentell-psychologische Untersuchungen über das Urteil: eine Einleitung in die Logik*, 1901, 93, 16, etc.

<sup>39</sup> Cf. Marbe's later statement: "I have supposed that what is done in these experiments is, in general, to bring out in the observer, by fitting prearrangements, experiences of some particular kind, and then at once to evoke judgments regarding these experiences" (review of E. Dürr, *Erkenntnistheorie*, *Zeits. f. Psych.*, lx, 1911, 121 f.). A complete account of introspective procedure demands, in Marbe's opinion, "a thorough-going, many-sided, perhaps somewhat tedious experimental enquiry" (*ibid.*).

<sup>40</sup> H. J. Watt, *Experimentelle Beiträge zu einer Theorie des Denkens*, *Arch. f. d. ges. Psych.*, viii, 1905, 289 ff. Inferences may be drawn from the sections 316 ff., 332 f., etc.; but I am here concerned only to discover how the author himself conceives his method,—not to interpret the observers' reports. Interpretation, if it is to carry conviction, must be based on a special experimental study, like that of which Marbe speaks.

<sup>41</sup> *Ibid.*, 289, 423. Cf. 426: the report, in psychological experiments, is not exhaustive.

nomenological to a strictly psychological report.<sup>42</sup> There is, undoubtedly, a change of attitude, as one passes from Marbe to Watt.

(3) The aim of Ach's method of 'systematic experimental introspection' is to secure "a complete description and analysis" of the experimental consciousness. The observer is instructed "to give in the after-period a detailed description of the processes experienced in the fore and main periods;" the intent to observe thus bears upon the contents of the after-period, and helps to throw them into clear relief, while it does not interfere with the consciousness of the two preceding periods. The ideas of the after-period are conditioned upon perseverative tendencies; they are not memory-images, but rather memory after-images; they may remain clear for several minutes. "At the beginning of the after-period, the observer frequently has a peculiar consciousness of what he has just experienced. It is as if the whole experience were given at once, but without a specific differentiation of contents. The entire process is, as one observer put it, given as if in a nutshell. The particularities of the process then emerge, clear and distinct, from this matrix. . . . The attention may be turned now to this now to that part of the perseverating contents, so that the simultaneous and successive portions of the experience can be subjected to a thorough-going analytical dissociation and description." Completeness of report is further guaranteed by question and answer; there is "a continual and intimate exchange of thoughts between observer and experimenter;" "the experimenter plays a more prominent part than in any other psychological method."<sup>43</sup> However, as practice increases, and

<sup>42</sup> Cf. 345, *note 2*, where an observer is taken to task for reporting in terms of a systematic psychology; and the section on the insufficiency of consciousness, 423 ff.—I select some typical remarks. (1) It is dangerous to argue from absence in report to absence of conscious contents. For there may be nothing present in consciousness, at the moment of introspection, to reproduce the particular experience; or what is present may simply be unable to reproduce it; or the *Aufgabe* of description, though operative, may not be sufficiently active; or the observer may not have reported all that he might have reported: 427. (2) Relations and delimitations are not given, as such, for description; their report demands special *Aufgaben* of explanation and comparison: 428 f. (3) Current 'descriptions' of certain higher processes are largely colored by theory, or have been made up in accordance with probabilities: 435.

<sup>43</sup> N. Ach, *Ueber die Willenstätigkeit und das Denken*, 1905, 8 ff. The following points may also be noted. (1) Perseveration is favored by attention, practice, and intent to observe: 10 f. (2) Both observer and experimenter must strive for completeness of description; the experimenter must therefore keep close watch upon the forms of expression used by the observer: 13 f., 16. (3) Disadvantages of psychological observation are: the need of a constant control of the terms of report, if description is to be adequate; the necessary assumption that a perseverating experience is identical with its original; the difficulty of reestablishing exact conditions; the very great difficulty of complete description: 15 f., 16 f., 20. (4) Great care must be taken that questions put by the experimenter are not suggestive: 17 f. (5) Temporal order must sometimes be sacrificed, in order that transient processes may be grasped and analysed: 19. (6) Practice favors description; so that part-processes which received but little attention in the original experience may stand out in the perseveration: 19 f. (7) Defects of the method of systematic experimental introspection, in its

the observer's vocabulary becomes fixed and precise, this feature of the method loses in importance.<sup>44</sup>

Müller criticises the method thus described by Ach on four principal grounds. It is, he says, dangerous, for several reasons, to have free recourse to question and answer. It is out of the question that the introspective report of a fairly complicated consciousness should be even approximately complete. The perseverative tendencies are selective and, at times, misleading; and we have no proof that they are strengthened by the intent to observe. Finally, it is dangerous to suggest to the observer that the contents of the after-period are identical with those of the experimental consciousness; we know of cases to the contrary; and the observer should therefore be instructed to report only such experiences as he remembers, with assurance, to have occurred during the experiment.<sup>45</sup>

present form, are: unequal duration of experiments, and of interval between experiments; occasional disturbance of an experiment by the after-effect of a foregone analysis: 22 f. (8) A control of introspection by variation of external conditions is essential: 16, 20 f., 25.

“*Ueber den Willensakt und das Temperament*, 1910, 7 ff. Questioning is necessary so long as observers are unpractised and terminology is unsettled; under the most favorable conditions, it “retires wholly into the background.” 8 f. Ach's ‘awareness’ (*Bewusstheit* = *Gegenwärtigkeit eines unanschaulich gegebenen Wissens*) was discovered by questioning: “erst durch das Eingreifen des Fragen stellenden Versuchsleiters wurden diese Erlebnisse aufgedeckt und dann bei jeder Versuchsperson nachgewiesen.” For the rest, questions cannot be harmfully suggestive if the method of systematic experimental introspection is given an experimental setting “which permits a quantitatively variable graduation of the causal conditions and a genetic-synthetic construction of the phenomena.” 9, 15, 17.—Ach again insists on completeness of analytical description, and urges that fractionation (Watt, *op. cit.*, 316 ff.) must be applied with great caution: 11.

“G. E. Müller, *op. cit.*, 137 ff. A. Michotte recognises that “the data of memory are fatally incomplete,” but thinks that the experimental conditions are, nevertheless, extremely favorable to reproduction. He believes, with Müller, that “questions like those put by Ach are not allowable” (*A propos de la ‘Méthode d'Introspection’ dans la psychologie expérimentale*, *Rev. Néo-Scolastique*, iv, 1907, 522 f., 525 f.). G. Deuchler criticises both the demand for complete description and the use of questions. Not only is questioning dangerous; it is also, at the best, of little value; for it increases the number of analytical results without enhancing the delicacy of analysis (*Beiträge zur Erforschung d-r Reaktionsformen*, *Psych. Studien*, iv, 1909, 380 ff.). These references are given by Müller. E. Westphal defends Ach's method: a ‘complete’ report means simply a non-selective report, an account of all that the observer can remember; and questions, dangerous as they are, are still under certain circumstances unavoidable (*Ueber Haupt- und Nebenaufgaben bei Reaktionsversuchen*, *Arch. f. d. ges. Psych.*, xxi, 1911, 432 ff.). Reichwein, on the other hand, anticipates much of Müller's criticism. Questioning is always dangerous (*op. cit.*, 77); reports are almost inevitably incomplete (58, 110, 133); the play of attention upon perseverating contents may introduce personal interests and prejudices (76). Reichwein points out that Ach's nutshell revival is a *Bewusstheit*, an awareness (103); and a comparison of the relevant passages in the *Willenstätigkeit und Denken* (11 f., 210 f.) confirms the remark; the after-period opens with a *Bewusstheit*,

(4) Messer gave his observers a long series of problems, some of which called for thought of 'objects,' and others for thought of 'concepts.'<sup>46</sup> The observers were instructed, "as soon as they had uttered the reaction-word, to report everything that they had experienced from the appearance of the stimulus-word up to the moment of reaction." Questions were employed but sparingly, and with care to avoid suggestion.<sup>47</sup>

Messer is expressly concerned with the nature of the introspective procedure; he wishes to discover "what is actually going on in the observer while he makes his report." "The observers were often required, at the end of their report of an experience, to state what they themselves had experienced while they were giving the report." He finds two main types of description. In some cases, "the experience just had is past, of course, and yet in a certain peculiar sense is still present; it is, so to say, arrested for examination;" here we have Ach's perseveration, or Lipps' direct recollection. In other cases, there is need of 'reflection'; the experience is 'reproduced' for examination; here we have Lipps' indirect recollection. Between these stand intermediate cases, in which recollection is direct, but reproductions "appear as it were of their own accord, as concomitant phenomena."<sup>48</sup>

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out of which the 'perseverating ideas' are explicated. But how then does Ach know that these ideas are really 'perseverative,' and not an imaginative reconstruction on the basis of the awareness? Finally, Wundt, writing in the same year as Michotte, passes negative judgment on Ach's use of questions (*Ueber Ausfrageexperimente und über die Methoden zur Psychologie des Denkens*, *Psych. Studien*, iii, 1907, 338 ff.). "Eine Frage ist an und für sich eine Beeinflussung, sie mag so vorsichtig wie möglich eingerichtet sein. . . . [Der Fragende] mag noch so vorsichtig sein, nach irgend etwas muss er doch fragen."

<sup>46</sup> A. Messer, Experimentell-psychologische Untersuchungen über das Denken, *Arch. f. d. ges. Psych.*, viii, 1906, 4 ff. I have already noted the logical formulation of Watt's problems; I note here that Messer's distinction seems calculated to bring in the stimulus-error. "This distinction is meant, of course," Messer says, "to carry a psychological meaning simply; the differences to which it points are differences merely in the thought-experience:" 149. That the differences are not psychologically self-evident is proved, however, by the fact that "not all observers were able to perceive them:" 150.

<sup>47</sup> *Ibid.*, 12.

<sup>48</sup> *Ibid.*, 14 ff.; T. Lipps, *Bewusstsein und Gegenstände*, *Psych. Untersuchungen*, i, 1905, 39 ff.; *Leitfaden der Psychologie*, 1906, 12 ff., 42 ff. Messer's treatment is schematic: we are not told, e. g., whether the reproductions of the mixed cases are used for the purpose of description, or serve as a check upon the description of the more stable memory after-images, or are just ignored.—The observer's knowledge that he has to report is, in general, favorable to fullness of statement: 17 ff. On this point, Messer furnishes, in Ach's behalf, the evidence that Müller finds to be lacking. Messer, however, has nothing to contribute to Ach's theory of perseveration; his references are to Lipps.—One observer reports: "When I make these statements, the experience (*das Erlebte*) is not always reproduced, though it often comes to that. It is a curious fact that, if statements of this sort have not suggested themselves (*sich bereit gestellt*) at the time of the experience (*mit dem Erlebten*), we know nothing whatever about it:" 16, 21 f. Yet the same observer declares: "There is no actual introspection during the experiment." I have discussed this report in *Thought-processes*, 1909,

(5) Bühler, like Watt, says little of his method. He demanded from his observers "a description, as accurate as possible, of what they had experienced during the experiment." No emphasis was laid upon completeness of report; it was rather desirable that the observers "should give a good account of what, in the particular case, they had seen with especial clearness and knew with perfect assurance." Nor was there any restriction of terms; the observers were allowed to choose their own words, and sometimes were expressly warned against the use of technical expressions. The method requires the intimate coöperation of experimenter and observer; but the coöperation is not secured, as with Ach, by much questioning; questions are employed only under stress of necessity; it is secured rather by empathy, by sympathetic understanding.<sup>49</sup>

So much Bühler volunteers. When the charge of *Kundgabe* and *sprachliche Darstellung* has been laid against him, he admits that "many parts" of his reports are not descriptive; but "one must not forget," he adds, "that I was obliged to report a great deal simply in order to show the connection in which the essential portion of the record stood."<sup>50</sup>

(6) The results of the series of studies published from the Cornell Laboratory<sup>51</sup> may be summarised as follows. First, there can be no doubt that direct memory (Ach's perseverating contents, Fechner's memory after-images) plays a part in the reports. In general, however, this part is intermittent: that is to say, a certain passage of the original experience will reappear in the after-period in direct memory, while the passages that precede and follow are reproduced in the ordinary way. We have never had any clear instance of Ach's total reinstatement. And it seems that the passages which thus stand out, in direct memory, are always passages which, in the original experience,

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239; I mention it here only to emphasise the slipperiness of methodological terms. It is plain that the 'suggestion' was conscious, or the observer could not have reported it.

Reichwein argues that direct recollection can hardly play any large part in investigations of this kind, since thought is teleological and shoots to a conclusion, with the result that the intermediate steps quickly fade from consciousness: *op. cit.*, 40, 110, 115 f., 150 f. He finds in this fact the critical justification of Wundt's second rule of experiment: *Psych. Studien*, iii, 1907; 308.

<sup>49</sup> K. Bühler, *Tatsachen und Probleme zu einer Psychologie der Denkvorgänge*. I. *Ueber Gedanken*, *Arch. f. d. ges. Psych.*, ix, 1907, 299, 305; 307 f.; 309, 331; 308 f., 313. Bühler finds an 'objective control' of the method in the immanent agreement of the reports and in the results of his experiments upon the memory of thoughts: 306 f. Reichwein thinks that the agreement of reports is, in such cases, inconclusive; the setting of the tasks and the phrasing of the instructions carry a suggestion from the experimenter: *op. cit.*, 56, 67, 74. Only where there is a truly objective control, by time-measurements and by variation of experimental conditions, is the agreement to be trusted: 77. Reichwein also expresses his lack of confidence in empathic interpretation of the reports: 109.

<sup>50</sup> *Zur Kritik der Denkexperimente*, *Zeits. f. Psych.*, li, 1909, 118; cf. *op. cit.*, 318.

<sup>51</sup> I do not give a list, as all have been printed in this JOURNAL. I have read a number of other articles upon Thought and Volition, all in fact that I could discover, but I have found nothing else of importance that bears on the conduct of the method.

had been 'marked' for report.<sup>52</sup> I cannot, however, affirm that there are no exceptions to this rule.<sup>53</sup>

Secondly, there is a tendency, apparently universal, to help out description by formulation of meaning. The tendency is exceedingly strong in the case of relatively unpractised observers. As practice advances, the mode of recall varies. Sometimes (and this is, perhaps, the ordinary procedure) meanings and content-processes alternate; the 'marked' passages of the experience are described, unmarked passages are summed up in a statement of meaning. Sometimes the observer takes his bearings, so to say, in terms of meaning before he begins to describe; the schema of meaning then serves as a support to, and as a check upon, the course of reproduction.<sup>54</sup> Sometimes, again, if reproduction fails at a given point of the report, the observer will hark back to meaning, and will reconstruct in imagination the content-processes of the original experience: this recourse is not common, but it has unquestionably occurred.<sup>55</sup> And sometimes the observer will deliberately turn away from meaning, and will set himself to report in the terms of descriptive psychology.<sup>56</sup>

Our experimenters differ as to the legitimacy of appeal to meaning; and such differences of opinion, where the whole method is still crude and imperfect, are only natural. They differ also, thirdly, as regards the propriety of questions. On the whole, I think, we have come to the conclusion that questioning is dangerous; and that, if a special point needs to be cleared up, it is better to work by way of variation of experimental setting and material. At all events, results obtained by questions should be sharply marked off from those derived from the spontaneous report of the observers.<sup>57</sup>

It is evident that these accounts are meagre; it is evident, too, that they contain an unsifted mixture of fact and theory, of exposition and valuation. But let us remember that we are dealing with a method in its formative stage, and that our own present question is not whether the method is valid, but

<sup>52</sup> A term which has become current in the laboratory for the 'marking' of a conscious complex by a practised observer is 'nodding to.' "I nodded to that as it came." Here we have a 'psychological appception' reduced to very low, if not to lowest terms.

<sup>53</sup> The rule may not be inverted: not all 'marked' passages recur in direct memory.

<sup>54</sup> This preliminary orientation by meaning may, perhaps, correspond to Ach's nutshell reproduction, which, as we saw, is a *Bewusstheit*, and not a reproduction in kind.

<sup>55</sup> Müller's *nachprobierendes Vorstellen*: *op. cit.*, 96.

<sup>56</sup> Including, in this case, the terms of the Würzburg school.

<sup>57</sup> Ogden and Dodge (see this JOURNAL, xxiii, 1912, 438) must, I imagine, have overlooked the fact that Ach's *Bewusstheit* was discovered by questioning on the part of the experimenter. Ach himself does not think it necessary to make this statement, explicitly, in the *Willenstätigkeit und Denken*, though he comes near it (e. g., 17, 41 note). At the other extreme stands the author of a recent article upon Feeling, who made many experimental observations upon his topic, but has preferred to say nothing about them, and simply to set forth his own theoretical convictions, because the confirmation received from his observers was gained by possibly suggestive questioning.

whether it can be formulated. We shall then find the scarcity of detail and the confusion of standpoints pardonable; and we shall realise that—whatever the prepossessions of the experimenter, and whatever the aberrations of the observer—the procedure followed can be pretty definitely stated. One gets the impression, indeed, that the experimenters, or at least the earlier of them, took the introspective method for granted: they were setting a straightforward task, which the trained observer was competent to perform. The event shows, of course, that the observer is as resourceful in going astray when the thought-processes are under observation as he is in other and better-known fields of experimental work; it shows also that the conduct of the method by the experimenter is by no means a simple matter. This insight, however, has itself depended, in no small measure, upon the communication of the method by those who have employed it; had their accounts been unintelligible or seriously inadequate, criticism must have remained general, and the detection of particular sources of error would have been impossible. The method of systematic experimental introspection, to return to Ach's phrase, has never been set down with the fullness to which we are accustomed in the case of sensation, of after-image, of perception, of memory, etc. And, in so far as this fullness of statement implies the establishment of norms, of definite rules and regulations for experimenter and observer, we must freely grant that, in the sphere of thought, it is as yet unattainable. Yet there can, surely, be no doubt that the practice of the Würzburg school is, in principle, communicable and that the formularies of introspection will some day be as exact for the more complex as they now are for the simpler content-processes.

Meanwhile, a host of questions is upon us. Are the experimental thought-consciousnesses 'free' consciousnesses in Müller's sense, or are they in any sense dependent upon the intent to observe? What is the effect of this intent to observe, in all the various forms that it may take and in all the various settings in which it may appear? May the non-observational methods, such as those of imaginative reconstruction and of communication,—may these non-observational methods be employed, under any circumstances, or must they be strictly forbidden? What are the marks that distinguish direct from indirect memory? What are the lowest terms of a psychological apperception? May it, like the *Aufgabe*, lapse with time into the unconscious? When, if at all, may the experimenter have recourse to questioning?

Questions, these, of very different range; and questions that, in the present state of our knowledge, admit of answer in very varying degree. Many of them have been discussed by Müller, in the work to which we have frequently referred: and the reader may be heartily recommended to that discussion. Some of them I hope to take up in a later paper.

*Summary.*—There are specific differences of introspective procedure, but all the forms show a generic likeness; introspection always presupposes the point of view of descriptive psychology, and the introspective methods thus do us the same service in psychologising that 'observation and experiment' do in natural science. The generic likeness of procedures allows us to write a general formula for the conduct of introspection; and a strict adherence to the descriptive standpoint allows us to determine the objects of introspection as content-processes. A tentative application of G. E. Müller's formula to the recent experimental work on Thought and Volition confirms the results of the foregoing theoretical discussion, while at the same time it raises a number of further methodological questions.